

Using Graphic Organizers to Improve Undergraduate Students' Reading Comprehension at Buriram Rajabhat University

การใช้ผังกราฟฟิกเพื่อพัฒนาการอ่านเพื่อความเข้าใจของนักศึกษาระดับปริญญาตรี
ชั้นปีที่ 2 มหาวิทยาลัยราชภัฏบุรีรัมย์

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Abstract

This paper aimed to examine the effects of graphic organizer whether it can help improve reading comprehension of undergraduate students and to investigate students' satisfactions toward the use of graphic organizers on reading comprehension. 28 undergraduate students majoring in Biology were chosen to be the participants of this study. During the experiment, the participants involved in reading comprehension training using graphic organizers. Pre test and post test were used to evaluate the efficiency of graphic organizers on reading comprehension. The results of this study confirm the effectiveness of graphic organizers on reading comprehension with the scores of the pre-test and the post-test were significantly different by .00. and the participants of this study reported a high satisfaction towards the use of graphic organizers ($\bar{X}=3.89$). However, it did not seem to assist students in term of vocabulary and grammar learning. Results were also discussed and suggestions for further studies were provided.

Keywords: Graphic Organizers, Reading Comprehension, Undergraduate Students

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลของการใช้ผังกราฟฟิกในการพัฒนาความสามารถในการอ่านเพื่อความเข้าใจของนักศึกษามหาวิทยาลัยราชภัฏบุรีรัมย์ และเพื่อสำรวจความพึงพอใจต่อการใช้ผังกราฟฟิกในการอ่านเพื่อความเข้าใจ กลุ่มตัวอย่างของการวิจัยในครั้งนี้ คือนักศึกษาระดับปริญญาตรี ปีที่ 2 สาขาวิชาชีววิทยา ที่เรียนวิชาภาษาอังกฤษทางวิชาการ 1 ในภาคการศึกษาที่ 1 ปีการศึกษา 2558 จำนวน 28 คน ข้อมูลที่นำมาวิเคราะห์นั้นได้จากการเปรียบเทียบคะแนนการสอบก่อนเรียน และหลังเรียน และผู้วิจัยได้ทำการสำรวจความพึงพอใจโดยการใช้แบบสอบถามผลที่ได้จากการทดลอง พบว่า การใช้ผังกราฟฟิกในการอ่านเพื่อความเข้าใจช่วยพัฒนาทักษะการอ่านเพื่อความเข้าใจได้ โดยความแตกต่างระหว่างคะแนนสอบก่อนเรียน และหลังเรียนอย่างมีนัยสำคัญที่ .00 นอกจากนี้ กลุ่มทดลองมีความพึงพอใจต่อการใช้ผังกราฟฟิกในการอ่านเพื่อความเข้าใจในระดับมาก ($\bar{X}=3.89$) แต่อย่างไรก็ตาม ผังกราฟฟิกไม่มีผลต่อการพัฒนาในด้านไวยากรณ์และคำศัพท์ของกลุ่มตัวอย่าง

คำสำคัญ: ผังกราฟฟิก, การอ่านเพื่อความเข้าใจ, นักศึกษาระดับปริญญาตรี

Introduction

Since English had been taught as a foreign language in Thailand, reading is the most important skill for the learners to achieve language goal because students are exposed to reading material more than listening, writing or speaking materials (Sukchotirat, 2005; Phakiti, 2006; Munsakorn, 2012). In addition, undergraduate students are expected to read and understand English textbooks both in the major subjects and fundamental subjects, therefore, good reading comprehension skill is required (Ozek, 2006).

This present study defined reading comprehension, according to Nunan (2003), as the ability to connect the main idea and supporting

details of the text to the organized pattern of knowledge of the reader in order to understand the meaning. However, most of Thai students fail to identify the main idea and supporting details of the passage which affects their reading comprehension skill (Siriphanich and Laohawiriyanon, 2010).

In addition, lack of reading strategies use is also one of the reading problems in Thai students that the students do not know how to apply appropriate reading strategies (Munsakorn, 2012). In addition, Grabe (2004) also indicates that reading instruction that emphasized on reading strategies influences reading comprehension ability of the readers. According to Keene and Zimmerman (1997), visual presentation of reading materials helps improve comprehension ability of the students more than other reading strategies (e.g. skimming, scanning and predicting) as it assists students to organize and connect the content of the passage which promote comprehension ability of the students.

Through a primary review of related literature and researches on the effects of graphic organizers on reading comprehension, very few studies have been found in Thailand. Most of the researches have been focused on the use of graphic organizers in lecture or listening skill. Moreover, students' misconception from the note is still needed to be investigated (Ahinoglu & Yasar, 2007). Besides, there are a few studies that explore the process effects when students taking note using graphic organizers (Rahmani & Sadeghi, 2011). Thus, to fill in the gaps, the aims of the present study are (1) to examine the effects of graphic organizer whether it can help improve reading comprehension of undergraduate students and (2)

to investigate students' attitudes toward the use of graphic organizers on reading comprehension.

Literature Review

Graphic organizers are used as both learning and teaching tools. It is used to organize abstract idea into visual form. Moreover, graphic organizers are also useful for student and teacher because it helps improved comprehension and revision of the written text (Manoli & Papadopoulou, 2012). However, few researchers studied the integration of graphic organizers on reading comprehension of the second and foreign language students (Tang, 1992; Suzuki, Sato & Awazu, 2008; Jiang & Grabe, 2007). In spite of the limited investigations of the use of graphic organizers in reading comprehension, the effectiveness of graphic organizers is emphasized (Jiang & Grabe, 2007).

According to Robinson and Molina (2002), graphic organizers are preferred to other organizational form for several reasons. First, by using graphic organizers, the concepts are presented in a visual form that is it portrays the organization of the concept. Another benefit of graphic organization is it converts the text into graphic organizer form which means that the students can study from both verbal and visual forms of the written text. Thus, learners can easily comprehend the text and it is also useful for long term memory.

In conclusion, the use of graphic organizers help illustrated the concept of written text into visual form which assists the learner's ability of comprehension (Manoli & Papadopoulou, 2012). Studies have shown the effectiveness of graphic organizers, thus teachers should integrate the use of graphic organizers in teaching and learning in order to enhance students' comprehension.

Related Research Studies

Previous studies investigated the effects that graphic organizers have on learners' reading comprehension. Rahmani and Sadeghi (2011) studied the process and product effects of note taking strategy training using graphic organizers on Iranian EFL learners' comprehension and retention of reading materials. Intermediate undergraduate EFL learners (N=108) were assigned to experimental and control groups. The Experimental groups received treatment on how to take notes by using graphic organizers as a guide, while the Control groups did not receive any treatment. The result showed that the Experimental groups performed significantly better on both comprehension and recalls tests.

Another related study on graphic organizers and reading comprehension was conducted by Hamid and Samuel (2013). The purpose of the study was to investigate the reading strategies used by EFL readers in reading two different topic familiarity and difficulty levels of scientific texts. The result of the study revealed that lower cognitive strategies like decoding and translating along with summarizing and visualizing strategies were effective strategies in reading comprehension. Simmons, Griffin and Kameenui (1988) studied the effects of graphic organizers on passage's information likes topic sentence, main idea and supporting details of EFL students. The result showed that with the use of graphic organizers, students were able to understand the content and identify main idea and supporting details of the passage.

In summary, it can be concluded that graphic organizers are useful for students to understand the reading materials as it assists reader's ability to comprehend what they read. Studies have shown

the effectiveness of the strategies in enhancing comprehension and they can integrate their knowledge and reading strategies in the process of reading. Thus, graphic organizers benefit reader's reading comprehension.

Research Methodology

Participants

The participants of this study were 28 second year Biology: section 2 students from Buriram Rajabhat University who enrolled in English for Academic Purposes 1 (0001202) in first semester of academic year 2015.

Reading Materials

The reading materials used in the present study based on 5 text structures (description, compare and contrast, cause and effect, sequence and problem and solution). Since the selection of the passages for EFL learners is considered to be complicated, as suggested by Day (1994), the passages used in the study are selected according to the criteria of appropriate passage selection for EFL learners (Nuttall, 2000) which have suitability of content, exploitability and readability.

Pre and Post Test

The pre-test and post-test were administered to investigate the improvement of reading comprehension ability of the participants before and after receiving the treatment. The readability was measured by Flesch Reading Ease score (Flesch, 1949) and has been considered appropriate for low intermediate learners (score: 68.5). The validity of the test content was checked by experts and the reliability of the test was measured by the Method of Coefficient Alpha of Cronbach. The tests were divided into 2 parts. The first part was in multiple choices format and the second part was

performance based test in which the participants had to summarize the passage in the test in their own word.

Instructional Procedure

Pre-test was administered before the students started to participate in the first session. Graphic organizers and text structures were introduced in the first session. Then, 4 main activities were performed from the second session to the sixth session. The first activity was pre-reading activity. In this task, teacher gave the sample passages and graphic organizers forms along with vocabulary lists. Teacher demonstrated how to use graphic organizers and explained vocabulary. Secondly, while-reading activity that included comprehension task was executed. Students were asked to practice taking note from the passage using graphic organizers and do the reading comprehension exercises. For the third activity, post-reading activity was operated. In this activity students were asked to summarize the information from the graphic organizers forms into a paragraph in order to investigate the accuracy. Finally, in the fourth task, mini-test was administered in order to check on students' memory and recall of main ideas for an immediate text.

The data for the satisfactions toward the use of graphic organizers were collected in the last session which comprised of post-test and questionnaire. The questionnaire was distributed to explore their satisfactions toward the use of graphic organizers. Open-ended section in the questionnaire was analyzed in order to investigate the participants' problem and opinion about the effectiveness of graphic organizers instruction on students' reading comprehension ability, the problems that the students might have had during the treatment and materials used in class.

The data collected from pre-test, post-test and questionnaire from sample group were analyzed by using t-test, mean (\bar{X}) and standard deviation (S.D.) in SPSS program.

Result

Research Question 1: What are the effects that graphic organizers have on reading comprehension of undergraduate students at Buriram Rajabhat University?

The purpose of research question 1 is to determine the effects of graphic organizers on reading comprehension of the participants. In order to answer research question 1, note-taking strategy training using graphic organizers was performed. The results from pre-test and post-test were compared (See Table 1)

Table 1: Pre and Post-Test Scores

Students	Pre-Test Score (25)	Post-Test Score (25)	Students	Pre-Test Score (25)	Post-Test Score (25)	Students	Pre-Test Score (25)	Post-Test Score (25)
1	13.5	16.5	11	7	8.5	21	9	12
2	14	16	12	10	16	22	8	10
3	10	6.5	13	4	8	23	8	8.5
4	10	11	14	15	19	24	8	11
5	9	10	15	10	18	25	10	9
6	10	11.5	16	13.5	14.5	26	7.5	13
7	17	18	17	7.5	10.5	27	11	9
8	5	7	18	17	20	28	13	15
9	14	18.5	19	9	13	Total	289.5	362
10	8.5	15	20	11	17	\bar{X}	10.339	12.928
						S.D.	3.26	4.00

As shown in Table 4, mean score (\bar{X}) of the pre-test was 10.33 and the standard deviation (S.D.) was 3.26. Mean score (\bar{X}) of the post-test was 12.92 and the standard deviation (S.D.) was 4.00. In order to determine a significant difference between the pre-test and the post-test average scores, mean scores (\bar{X}) and standard deviation (S.D.) of the pre-test and post-test were analyzed by using t-test. (See Table 2)

Table 2: Statistical Difference between Pre-Test and Post-Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
PRETEST - POSTTEST	-2.589	2.5533	.4825	-3.579	-1.599	-5.366	27	.000

It can be seen that the scores of the pre-test and the post-test were significantly different by 0.000, thus it can be concluded that graphic organizers helped improve reading comprehension ability of the participants.

Research Question 2: What are the students' satisfactions toward the use of graphic organizers to improve reading comprehension?

The data from questionnaire were collected in order to answer research question 2. Mean scores derived from the students' responses concerning attitudes are analyzed by using the following ranges (Sclove, 2001):

Very high	=	4.50-5.00
High	=	3.50-4.49
Moderate	=	2.50-3.49
Low	=	1.50-2.49
Very Low	=	1.00-1.49

Table 3: Students' Satisfaction toward the Use of Graphic Organizers to Improve Reading Comprehension Items Mean

Items	Mean \bar{X}	Std. Deviation	Level
1. Graphic organizers increase my interest to read the passages.	4.50	0.58	Very high
2. It is easy to construct a graphic organizer if you know the meaning of the words.	4.36	0.68	High
3. Graphic organizers help activate my background knowledge.	4.53	0.57	Very high
4. Making prediction before reading help me get the general information of the text.	3.32	0.72	Moderate

Items	Mean \bar{X}	Std. Deviation	Level
5. Identifying writer's purpose helps me focus on the main goal of what I am going to read.	4.14	0.65	High
6. Graphic organizers help me to understand the text structure.	4.25	0.97	High
7. Graphic organizers help me to get the main idea of the text.	4.57	0.57	Very high
8. Graphic organizers help me to get the supporting details of the text.	4.54	0.64	Very high
9. Graphic organizers help me to connect the key ideas in a text.	4.32	0.72	High
10. Graphic organizers decrease the difficulties of learning grammar.	3.32	0.90	Moderate
11. Graphic organizers help me to understand word meaning.	3.46	0.84	Moderate
12. It is easy to construct a graphic organizer if you understand the text.	3.43	0.74	Moderate
13. Graphic organizers help me to summarize the text.	4.21	0.74	High
14. Graphic organizers can help me with vocabulary retention.	3.43	0.79	Moderate
15. Graphic organizers help me monitor my comprehension.	4.61	0.50	Very high
16. Graphic organizers help me in analyzing the text.	3.36	0.78	Moderate
Total	3.89	0.69	High

The results from Table 5 revealed that the participants (N=28) had a high satisfaction with the use of graphic organizers to improve reading comprehension, thus it can be concluded that they had a positive attitude toward the application of graphic organizers.

Specifically, the result suggested that graphic organizers help the participants to monitor their comprehension with the highest mean score (\bar{X}) of 4.61 and the standard deviation (S.D.) of 0.50. Moreover, it can also be concluded from the table that graphic organizers help the participants to get the main idea of the reading materials with the mean score (\bar{X}) of 4.57 and the standard deviation (S.D.) of 0.57 which is considered to be very high. Likewise, the use of graphic organizers also assisted them to get the supporting details of the text with the mean score (\bar{X}) of 4.54 and the standard deviation (S.D.) of 0.64. Also, the use of graphic organizers activated the participants' background knowledge which aid their comprehension with the mean score (\bar{X}) of 4.53 and the standard deviation (S.D.) of 0.57.

However, the use of graphic organizers, according to the result, moderately decreased the difficulties of learning grammar with the mean score (\bar{X}) of 3.32 and the standard deviation (S.D.) of 0.90.

Discussions

From the result, it can be seen that graphic organizers can help improve reading comprehension ability of the participants which conformed to previous study that graphic organizers benefitted reading comprehension ability of the students (Simmons, Griffin and Kameenui, 1988; Trabasso & Bouchard, 2002 ; Rahmani and Sadeghi, 2011 ; Manarin, 2012 ; Hamid and Samuel, 2013). Therefore, the benefits of graphic organizers were discussed based on the results of the present study.

The results confirmed the effectiveness of graphic organizers in reading comprehension as the mean score (\bar{X}) of the post-test (12.9) was higher than the pre-test (10.3). The improvement is significantly different by 0.000 using t-test. The improvement of students' scores according to the benefits of graphic organizers was discussed as followed:

Graphic organizers provided scaffolding for improving reading comprehension (Manoli & Papadopoulou, 2012). They can be used as "visual scaffolds" (p.354) that assists students to activate their background knowledge, increase their interest and identify the main idea and supporting details of the text resulting in better comprehension and recall. Moreover, by using graphic organizers, the concepts are presented in a visual form that is it portrays the organization of the passage (Robinson & Molina, 2002). In addition, the knowledge of text structures is considered to be one of the important factors that can help assist comprehension ability of the readers (Robinson & Kiewra, 1995 ; Duke et al., 2011). As a result, graphic organizers convert the text into visual form which means that the students can study from both verbal and visual form of the written text. Thus, learners can easily

comprehend the text.

Interestingly, the result suggested that graphic organizers can be used as a tool in order to monitor students' comprehension. This result filled in the research gap of the study of Ahinoglu and Yasar (2007). They suggested that students' misconception from graphic organizers is still needed to be investigated. Thus, the use of graphic organizers revealed students' misconceptions which can help teacher and students to revise and correct the errors.

In conclusion, graphic organizers benefitted the students both by assisting their comprehension as well as facilitating comprehension of the main ideas and supporting details of the text (Jiang & Grabe, 2007). It also integrates the readers' prior knowledge with the new knowledge (Zaini, Mokhtar & Nawawi, 2010) which resulted in better comprehension. Moreover, graphic organizers can be applied as a comprehension monitoring tool which can help teacher and students to revise and correct the errors resulting in better comprehension and academic accomplishment.

Conclusion and Implication

This paper aims to examine the effects of graphic organizer whether it can help improve reading comprehension of undergraduate students and to investigate students' satisfactions toward the use of graphic organizers on reading comprehension. The results of this study confirm the effectiveness of graphic organizers on reading comprehension and the participants of this study reported a high satisfaction towards the use of graphic organizers.

The findings of this study offer some pedagogical implications. First, graphic organizers can be used as comprehension monitoring tool in

order to check for students' errors and misconceptions from the text. Second, the use of graphic organizers promotes cooperative learning. By creating and filling in graphic organizers, students engage in class activities and it is more interesting for the students to actively involve in the tasks. This, according to Jiang (2012), is one of the important factors in learning process.

To summarize, graphic organizers help assist reading comprehension of undergraduate students as a visual scaffold. The results conform

to the study of Koda (2007) that text meaning should be composed according to visually decoded information. However, future studies should investigate the effects of graphic organizers on bigger sample group, so the result can be generalized and more reading strategies should be compared. As a result, the use of graphic organizers in EFL class should be executed for better learning process and achievement and this study, hopefully, offers a foundation for further studies on improving reading comprehension ability of EFL learners.

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